1/23

Series 1
No. 23

NATIONAL CENTER FOR HEALTH STATISTICS **nchs**

Vital and Health Statistics

Data Systems of the National Center for Health Statistics

March 1989

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service
Centers for Disease Control

HE 20.6209:

READEX FICHE best copy available

Vital and Health Statistics

Data Systems of the National Center for Health Statistics

Series 1:
Programs and Collection Procedures
No. 23

The data collection program of the National Center for Health Statistics during the 1980's is described in this report. The systems are grouped by the origin of the data — the vital statistics registration system, provider-based surveys, and population-based surveys.

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service
Centers for Disease Control
National Center for Health Statistics

Hyattsville, Maryland
March 1989
DHHS Publication No. (PHS) 89-1325

National Center for Health Statistics

Manning Feinleib, M.D., Dr.P.H., *Director*

Robert A. Israel, *Deputy Director*

Jacob J. Feldman, Ph.D., *Associate Director for Analysis and Epidemiology*

Gail F. Fisher, Ph.D., *Associate Director for Planning and Extramural Programs*

Peter L. Hurley, *Associate Director for Vital and Health Statistics Systems*

Stephen E. Nieberding, *Associate Director for Management*

Charles J. Rothwell, *Associate Director for Data Processing and Services*

Monroe G. Sirken, Ph.D., *Associate Director for Research and Methodology*

Sandra S. Smith, *Public Affairs Officer*

Office of Vital and Health Statistics Systems

Peter J. Hurley, *Associate Director*

Mary Grace Kovar, Dr.P.H., *Special Assistant for Data Policy and Analysis*

Gloria Kapantais, *Assistant to the Director for Data Policy, Planning and Analysis*

Foreword

The data systems of the National Center for Health Statistics offer many ways of looking at health. They also offer a remarkable number of opportunities for research. Because data are usually published from each system separately, the wide range of data from the Center is sometimes not apparent. The purpose of this publication is to introduce people to the data systems, to suggest research opportunities, and to indicate how NCHS data are made available.

The data systems are used to obtain information from people, from health care providers, and from vital records. Each method has advantages and disadvantages that become apparent only when the different methods are described together in one publication. For example, a person knows the impact a disease has on his life but may not know the precise diagnosis; the health care provider can give the diagnosis but may know little about the impact. Both views are needed if we are to understand the impact of disease on people and on the health care system and if we are to try to understand the etiology of disease.

People who are familiar only with some of the publications from the Center may be unaware that many items are recorded and coded consistently on the different systems. Age is always recorded in single years or by date of birth. Education is recorded in single years. Race is included on all the systems and, where possible, information on Hispanic ethnicity. Causes of death and diseases are coded to the International Classification of Diseases. Most data systems include codes for Census regions or divisions. The vital statistics system includes codes for States that can be combined to form regions or divisions. This consistency makes it possible for research using data from several systems.

People who are familiar with only one data system may be unaware that complementary information can be obtained from another system. Medical care is a good example. Almost all of the systems have some information about medical care, whether it is care for a specific disease, during pregnancy, within a year, during the last year of life, or in specific kinds of medical-care settings.

This brief publication will introduce you to the systems and the opportunities. My hope is that you will learn enough here to give you ideas. You can then read the reports describing each of the data systems to learn more.

Manning Feinleib, M.D., Dr.P.H.,
Director

Contents

Foreword iii

Introduction 1

Confidentiality 2

Data release 3
- Vital and Health Statistics Series 4

Data systems 5
- Vital Registration System and surveys 6
  - National Vital Statistics System 6
  - Surveys based on registration system 6
    - National Mortality Followback Survey 6
    - 1988 National Maternal and Infant Health Survey 7
- Provider-based surveys 8
  - National Health Care Survey 8
  - National Master Facility Inventory 8
  - National Hospital Discharge Survey 9
  - National Ambulatory Medical Care Survey 10
  - National Nursing Home Survey 10
  - Longitudinal studies based on provider surveys 11
    - National Nursing Home Survey Followup 11
- Population-based surveys 12
  - National Health Interview Survey 12
  - National Medical Care Utilization and Expenditure Survey 13
  - National Health Examination Surveys and National Health and Nutrition Examination Surveys 14
  - Hispanic Health and Nutrition Examination Survey 16
  - National Survey of Family Growth 17
  - Longitudinal studies based on population surveys 18
    - NHANES I Epidemiologic Followup Study 18
    - Longitudinal Study of Aging 19

Data from more than one system 20

Data Systems of the National Center for Health Statistics

Mary Grace Kovar, Dr.P.H.,
Vital and Health Statistics Systems

Introduction

The National Center for Health Statistics is one of the major Federal statistical organizations. It has legislative authority to collect statistics on: (a) the extent and nature of illness and disability in the United States, including life expectancy, the incidence and prevalence of acute and chronic illness and disability, and infant and maternal mortality and morbidity; (b) determinants of health; (c) health resources; (d) use of health care resources, including use of ambulatory services, hospital care, nursing homes, and other long-term care facilities; (e) health care costs and financing; and (f) family formation, growth, and dissolution.

To carry out its mission, the Center conducts many annual, periodic, and longitudinal surveys to produce a wide range of health statistics. It obtains the records or computer files from States and other registration areas to publish the national data on vital statistics. It maintains an inventory of health facilities.

This document is designed to provide a brief description of each of the data collection systems, some of the most important information derived from the system, references for readers who want more detailed descriptions, and the means of releasing information through publications and public-use data files.

Confidentiality

The data-collection activities of the National Center for Health Statistics (NCHS) are subject to the provisions of both the Privacy Act of 1974 (5 U.S.C. 552a) and the Public Health Service Act (42 U.S.C. 242m) and its confidentiality provisions in section 308(d). The Privacy Act covers all federally sponsored and operated data collection that involves the creation of systems of records containing personal identifiers. Section 308(d) relates only to a limited portion of Public Health Service activities.

In keeping with the requirements of the Privacy Act and with NCHS policy, each individual, household, or establishment asked to provide information is first informed:

(1) Of the legal authorization for soliciting the information.
(2) Of the principal purpose or purposes (usually statistical or research) for which the information is to be used, and how it will be used.
(3) That providing the requested information is voluntary.
(4) Of the effect on the respondent, if any, of not providing all or any part of the information.

When vital statistics or other data are purchased, it is done through contracts that include similar assurances. Section 308(d) of the Public Health Service Act makes the following provisions for data that the NCHS is authorized to collect:

- That no data so obtained may be used for any purpose other than the stated purpose for which it was collected, and
- That such information may not be published or released in any form if the particular establishment or person supplying the information or described in it is identifiable unless the establishment or person has consented to such publication or release.

Thus, the Center operates under strong laws that mandate protection of the confidentiality of records.

Almost all of the data collected by or for the National Center for Health Statistics are obtained under a pledge to the respondent, whether an individual or an establishment, that the information will be used only for statistical purposes and that it will not be released in such a way that any person, household, or facility can be identified. The NCHS never releases identifiable information on individuals or households. Information is sometimes released on facilities, but only when the facility administrators had been advised when they provided the data as to what items of information would not be accorded confidential treatment.

The *NCHS Staff Manual on Confidentiality* presents and explains in detail the confidentiality policies of the Center and ways in which they are implemented.

Data release

The National Center for Health Statistics releases data in many ways. The two major ways are through its own publications and through public-use micro-data files.

A *Catalog of Publications* of the National Center for Health Statistics is published annually. An update of recent NCHS publications is published quarterly.

A *Catalog of Public Use Data Tapes* from the National Center for Health Statistics is published periodically. It contains details about the files, including the number of records, source of the data, variables on the file, technical characteristics of the tape, documentation, ordering instructions, and other information to help people identify and acquire NCHS data tapes. The catalog is supplemented by *Data Tape Updates*, a publication issued several times throughout the year.

Advance Data From Vital and Health Statistics are brief reports of newly available data on topics of special interest from all of the surveys.

Monthly Vital Statistics Reports provide monthly data on births, marriages, divorces, and deaths based on provisional data. Supplements provide annual summaries, the first release of the final data, and information on selected topics.

These publications are available from the Scientific and Technical Information Branch of NCHS at no charge. Individuals and organizations that ask to be placed on the mailing list receive them routinely as they are issued.

All other publications are sold through the U.S. Government Printing Office to individuals and are mailed without charge only to nonprofit libraries and selected institutions that have asked to be placed on the mailing list.

The *Vital and Health Statistics* series reports are the primary means of releasing information from and about the surveys. They include reports from each of the data collection systems with detailed cross-tabulations of the data. They also include reports on the design of the systems, reports with results of methodological research, and reports from the U.S. National Committee on Vital and Health Statistics.

Vital Statistics of the United States is the primary means of releasing information from and about the vital statistics registration system. The four volumes—one for natality, two for mortality, and one for marriage and divorce—are published annually and contain detailed cross-tabulations of data on births, deaths, marriages, and divorces. They also contain the technical information about the vital statistics systems. Mortality, Part A, includes annual life tables, which are also published separately as *Vital Statistics of the United States, Life Tables.*

Health, United States is the Secretary's annual report to the Congress that is prepared by NCHS. It contains information, especially time trends, from all of the NCHS data systems (and from other sources) on health and use of and expenditures for health services.

Data from NCHS are also released through other Federal publications, such as the *Statistical Abstract*, which is published by the U.S. Bureau of the Census, National Nutritional Monitoring reports, published by the Departments of Agriculture and Health and Human Services, and proceedings of workshops and conferences.

Special tabulations are prepared to meet data requests that cannot be filled in any other way. When special tabulations are requested, the requestor is given a cost estimate.

In addition, people on the NCHS staff write articles that are published as chapters in books or as articles in professional journals. Most of the recent publications are listed in the *Catalog of Publications* of the National Center for Health Statistics.

Public-use data tapes are sold primarily through the National Technical Information Service in Springfield, Virginia. However, some files are released by the program where the data originated. They are noted in the description of the system in this report and in the *Catalog of Public-Use Data Tapes* from the National Center for Health Statistics.

All publications, special tabulations, and data files are reviewed carefully to ensure that confidentiality is maintained.

For more information on the data systems, publications, and public-use data tapes, or to ask to be placed on the mailing list, contact:

Scientific and Technical Information Branch
National Center for Health Statistics
3700 East-West Highway
Hyattsville, MD 20782
(301) 436-8500.

The Scientific and Technical Information Branch provides information and user services, including a public inquiries program that provides published and unpublished data and reference and referral services.

Vital and Health Statistics Series

Series Number	*Content*
1	Programs and Collection Procedures.
2	Data Evaluation and Methods Research.
3	Analytic and Epidemiological Studies.
4	Documents and Committee Reports.
5	Comparative International Vital and Health Statistics Reports.
6	Cognition and Survey Measurement.
10	Data From the National Health Interview Survey.
11	Data From the National Health Examination Survey and the National Health and Nutrition Examination Survey, Including the Hispanic Health and Nutrition Examination Survey.
13	Data on Health Resources Utilization.
14	Data on Health Resources: Manpower and Facilities.
15	Data From Special Surveys.
16	Compilations of Advnace Data From Health and Demographic Surveys.
20	Data on Mortality.
21	Data on Natality, Marriage, and Divorce.
23	Data From the National Survey of Family Growth.
24	Compilations of Data on Natality, Mortality, Marriage, Divorce, and Induced Termination of Pregnancy.

Data systems

Vital Registration System and surveys

Death registration system
Fetal death reporting system
Birth registration system
Marriage registration system
Divorce registration system
Abortion reporting system

Surveys based on the registration system

- National Mortality Followback Surveys
- National Maternal and Infant Health Survey (including the National Natality Surveys and the National Fetal Mortality Surveys)

Provider-based surveys

National Health Care Survey
National Master Facility Inventory
National Hospital Discharge Survey
National Nursing Home Survey
National Ambulatory Medical Care Survey

Longitudinal survey based on provider surveys:

- National Nursing Home Survey Followup

Population-based surveys

National Health Interview Survey
National Medical Care Utilization and Expenditure Survey
National Health and Nutrition Examination Surveys (including the National Health Examination Surveys)
Hispanic Health and Nutrition Examination Survey
National Survey of Family Growth

Longitudinal surveys based on population surveys:

- NHANES I Epidemiologic Followup Study
- Longitudinal Study of Aging

Vital Registration System and surveys

National Vital Statistics System

- *Births*—demographic, maternal, and infant health information.
- *Deaths*—demographic characteristics of the decedent, cause of death.
- *Expectation of life*—the average length of life remaining at any given age.
- *Infant mortality*—demographic characteristics, cause of death.
- *Fetal death*—demographic, maternal, and medical characteristics.
- *Induced termination of pregnancy*—demographic, patient, and medical.
- *Marriages*—characteristics of the bride and groom and of the ceremony.
- *Divorces*—characteristics of the husband and wife and of the decree.

Through the National Vital Statistics System, the National Center for Health Statistics (NCHS) collects and publishes data on births, deaths, marriages, and divorces in the United States. Fetal deaths are classified and tabulated separately from other deaths. The Division of Vital Statistics obtains information on births and deaths from the registration offices of all States, New York City, the District of Columbia, Puerto Rico, the U.S. Virgin Islands, and Guam. Geographic coverage for births and deaths has been complete since 1933. Registration areas for marriages and divorces were begun in 1957 and 1958, respectively. The marriage-registration area (MRA) expanded from 33 States in 1957 to 42 States and the District of Columbia in 1986, and the divorce-registration area (DRA) expanded from 14 States in 1958 to 31 States and the District of Columbia in 1986. (Puerto Rico and the U.S. Virgin Islands have been in the MRA since 1957 and the U.S. Virgin Islands in the DRA since 1958.)

Until 1972, microfilm copies of all birth, death, marriage, and divorce certificates were received from the registration areas and processed by NCHS. Beginning in 1972, some States began sending their data to NCHS through the Cooperative Health Statistics System (CHSS) on computer tape. Currently, the data are sent to NCHS through the Vital Statistics Cooperative Program (VSCP), following the same procedures as the CHSS. The number of participating States for births and deaths grew from 6 in 1972 to 46 in 1984; all 50 States and the District of Columbia participated in the VSCP beginning in 1985. For marriages, 12 States have participated in the VSCP since 1977. For divorces, there were eight States for 1977–83 and nine States since 1984.

The standard certificates of birth, death, induced termination of pregnancy, fetal death, marriage, and divorce recommended by NCHS are modified in each registration area to serve the area's needs. However, most certificates conform closely in content and arrangement to the standard certificate.

In most areas, practically all births and deaths are registered. The most recent test of the completeness of birth registration, conducted on a sample of births from 1964 to 1968, showed that 99.3 percent of all births in the United States during that period were registered. No comparable information is available for deaths, but it is generally believed that death registration in the United States is at least as complete as birth registration. Provisional death rates by cause, age, race, and sex are estimated from the Current Mortality Sample. The Current Mortality Sample is a 10-percent systematic sample of death certificates received each month in the vital statistics offices in the 50 States, the District of Columbia, and the independent registration area of New York City. All death certificates received during the 1-month period are sampled regardless of the month or year in which the death occurred.

Beginning with data year 1984, information is available on the usual occupation and industry of the decedent for 16 reporting States.

Beginning with data year 1988, infant mortality data are available in files that link the characteristics of the infant at death as reported on the death certificate with the characteristics of the same infant at birth as reported on the birth certificate in a linked file of infant deaths and live births. This provides a resource for studying infant mortality by the characteristics of the mother and the infant at the time of birth.

Cause of death is coded according to the International Classification of Diseases, which is promulgated by the World Health Organization at the most detailed (four-digit) level. Since 1968, information has been available for both underlying and multiple causes of death.

Data are published in *Vital Statistics of the United States* (Volume I, Natality; Volume II, Parts A and B, Mortality; and Volume III, Marriage and Divorce), *Monthly Vital Statistics Reports* and its supplements, and in *Vital and Health Statistics* (Mortality, Series 20; and Natality, Marriage, and Divorce, Series 21).

Surveys based on registration system

National Mortality Followback Survey (NMFS)

- Mortality by socioeconomic factors
- Premature deaths
- Health care and cost of health care
- Comparisons with data on death certificates

The 1986 National Mortality Followback Survey was the fifth in a series of surveys conducted by the Center. The earlier surveys were based on deaths that occurred in 1961, 1962–63, 1964–65, and 1966–68.

The 1961 survey had a sample size of 5,154 and information was obtained on the utilization of hospitals and institutions during the last year of the decedent's life.

From the 1962–63 survey, with a sample size of 10,822, data were obtained on household composition, education, income, and residence of the decedent in addition to utilization of hospitals and institutions in the last year of life. The 1964–66 survey of persons 35 years of age or over had a sample size of 10,408 and covered the following topics: utilization, hospital and surgical insurance coverage, charges for hospital care and source of payment, surgeons' bills and source of payment, household composition, and assets and income.

The 1966–68 survey of persons 35–84 years of age had a sample size of 19,526, and information was obtained on utilization, family composition, and smoking habits. A public-use data tape is available for the 1966–68 survey.

The 1986 NMFS was based on a sample of 18,500 death certificates of persons ages 25 years and over who died in the United States in 1986. The next of kin identified on the death certificate, or some other knowledgeable informant, was the respondent. The survey was designed to supplement the information on the death certificate. Information was also obtained on:

- Socioeconomic status, including family income
- Assets
- Education
- Use of health care resources in the last year of life
- Disability prior to death
- Health habits such as smoking and drinking alcoholic beverages

The 1986 data collection was conducted in quarterly phases by the U.S. Bureau of the Census, with questionnaires mailed approximately 6–8 months after the sample person's death. Cases that did not respond after two mailings of the questionnaire were sent to the field for followup by telephone or personal visit.

A major purpose of the 1986 NMFS was to examine the reliability of items reported on the death certificate by comparing these items with the same items reported by the survey respondent. Items to be compared included age, race, veteran status, and occupation and industry.

Although all 50 States granted their approval for use of a sample of their death certificates in the NMFS, Oregon is not included in the NMFS.

There was also a facility phase of the 1986 NMFS. It involved mailing a Facility Abstract Record (FAR) to those health facilities in which a decedent had spent at least one night during the year prior to death. The FAR was used to obtain the admission date, discharge date, diagnoses, and procedures for each facility stay.

A public-use data tape from the next-of-kin or informant questionnaire was released in January 1989. A public-use data tape that adds information from the facility phase of the NMFS should be available in late 1989.

Data will be published in *Vital and Health Statistics*, Series 20.

1988 National Maternal and Infant Health Survey (NMIHS)

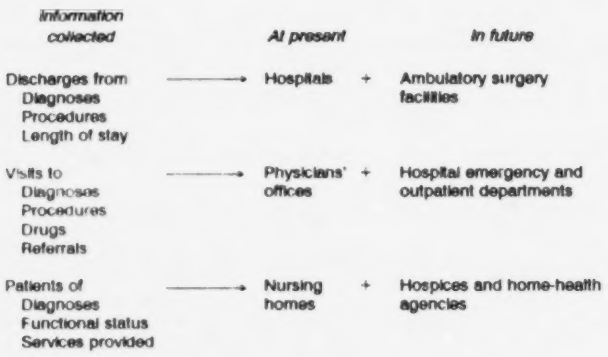
- Information not on the vital records
- Fetal death ratios, perinatal mortality rates, and neonatal and postneonatal mortality rates
- Demands on maternal and infant health delivery systems
- Evaluation of the quality and completeness of information on vital records
- Trends using data from previous followback surveys

The 1988 National Maternal and Infant Health Survey (NMIHS) is the most recent of a series of related surveys. The earlier related surveys include the National Mortality Followback Surveys (1961–68, 1986), the National Natality Followback Surveys (1963, 1964–66, 1967–69, 1972, 1980), the National Fetal Mortality Survey (1980), and the National Infant Mortality Survey (1964–66). The 1988 National Maternal and Infant Health Survey incorporates components from all of these earlier surveys.

The 1988 NMIHS consists of three components: a natality survey based on 10,000 certificates of live birth, a fetal mortality survey based on 4,000 reports of fetal death, and an infant mortality survey based on 6,000 infant death certificates. Black persons were oversampled in all three components such that one-half of the infants are black. Low birth weight and very low birth weight infants were oversampled in the natality component. The areas of investigation included causes of low birth weight and infant death; barriers and facilitators to prenatal care; the effects of maternal smoking, marijuana and cocaine use, and drinking on pregnancy outcome; the effects of sexually transmitted diseases (including AIDS) on pregnancy outcome; and use and evaluation of public programs, such as WIC and Medicaid, by mothers and infants. The 20,000 mothers (married and unmarried) named on vital records were contacted by mail, telephone, and/or personal interview. Mothers were asked to identify all providers of health care for their pregnancy and delivery, and to sign a consent statement releasing their medical information. This consent statement was used to obtain medical data about the mothers and infants from the hospitals where they delivered their infants and where they and their infants were hospitalized up to 6 months after delivery. Chronic disease information, as well as medical procedures and diagnoses, was obtained in both written form and in ICD-9. Prenatal care providers were also contacted for information. A total of 60,000 respondents were contacted (20,000 mothers, 20,000 hospitals, and 20,000 prenatal care providers). The U.S. Bureau of the Census is the NMIHS data collection contractor.

Provider-based surveys

National Health Care Survey



During the past decade, notable changes in the health care delivery system have taken place. Legislation, the desire to avoid institutionalization, and the development of new medical techniques have led to a shift from inpatient to outpatient, ambulatory, and home settings. The Federal Government implemented the prospective payment system in 1983. Private insurance companies followed suit and changed reimbursement policies. Federal programs and private insurance for long-term and catastrophic care are being developed. New initiatives to provide long-term care at home are being implemented. New facilities, and new ways of providing care, have been developed to address these health care markets.

In an effort to meet the data needs of a new health care environment, the NCHS plans to integrate the provider-based surveys and expand them into the National Health Care Survey (NHCS). The goals of the NHCS are to expand data collection into alternative health care settings, provide greater analytical capabilities by use of an integrated cluster sample, establish annual data collection for each health care setting, and provide for patient followup studies.

The NHCS has five basic components.

- *The Health Provider Inventory Component* is based on the National Master Facility Inventory. The inventory now provides national data on facilities and is the sampling frame for the National Hospital Discharge Survey (NHDS) and the National Nursing Home Survey (NNHS). It is to be expanded to include providers of ambulatory acute care and community-based long-term care.
- *The Hospital and Surgical Care Component* is based on the National Hospital Discharge Survey. This component will be enlarged to include outpatient surgical units and free-standing surgicenters in the survey.
- *The Ambulatory Care Component* has as its base the National Ambulatory Medical Care Survey. This component is to be expanded initially to include hospital-based physicians providing medical care in hospital emergency rooms, outpatient departments, and clinics. When fully implemented, this component will also cover ambulatory care provided in other settings, such as health clinics.
- *The Long-Term Care Component* will be based on the National Nursing Home Survey. This survey will be restructured and expanded to include health agencies and hospices. The Long-Term Care Component will provide data from smaller annual surveys instead of periodic surveys with larger samples.
- *The Patient Follow-on Component*, an important feature planned for the National Health Care Survey, will provide information on outcomes of patient care and subsequent use of care through periodic contacts with patients or patients' families. Information on subsequent treatment, outcome of treatment, and change in health status will be gathered either from the patient or from the family of the patient. Data from the followup will be useful in assessing the utilization and financing of health care and in developing profiles of care.

The National Health Care Survey utilizes a cluster sample design. Providers are to be sampled from the same geographic areas used for the National Health Interview Survey. This cluster design has several advantages. It will be possible to stratify areas by their characteristics, such as income or availability of services, and to study the relationship between health care use and health status indicators within such strata. It will also provide the opportunity for producing statistics for some local areas, data which the current health care surveys were not designed to produce.

The NHCS will be implemented over a period of years as resources permit. The NHDS was incorporated into the new design in 1988, with expansion to surgicenters scheduled for the early 1990's. In 1989, the Ambulatory Care Component will begin the office-based physician survey on a continuing basis and, in 1990, will pretest the inclusion of hospital outpatient clinics and emergency rooms. It is planned that all components of the NHCS will be conducted annually by 1993.

Data release

Many of the reports in Series 13, such as the annual summary of hospital discharge data, will continue. However, new reports, covering health care in all settings in each component can be anticipated. For example, a report may present statistics on all aspects of long-term care including, but not limited to, nursing homes. Another report may provide data on surgical procedures, regardless of where they are performed.

National Master Facility Inventory

- Number of facilities
- Geographic spread and concentration
- Characteristics of facilities

The National Master Facility Inventory (NMFI) is a comprehensive file of inpatient health facilities in the United States. The three broad categories of facilities in the NMFI are hospitals, nursing and related care homes, and other custodial or remedial care facilities. To be included in NMFI, hospitals must have at least six inpatient beds, and nursing and related care homes must have at least three inpatient beds.

The NMFI is kept current by the periodic addition of names and addresses obtained from State licensing and other agencies for all newly established inpatient facilities. In addition, annual surveys of hospitals and periodic surveys of nursing homes and other facilities are conducted to update name and location, type of business, number of beds, and number of residents or patients in the facilities, and to identify those facilities that have gone out of business.

From 1968 through 1975, the hospital survey was conducted in conjunction with the American Hospital Association (AHA) Annual Survey of Hospitals. AHA performed the data collection for its member hospitals, and the National Center for Health Statistics (NCHS) collected the data for the approximately 400 non-AHA registered hospitals. Since 1976, however, all of the data collection has been performed by AHA.

Hospitals are requested to report data for the full year ending September 30. More than half of the responding hospitals used this reporting period for the 1982 survey. The remaining hospitals used various other reporting periods. The response rate for the 1982 hospital survey was about 90 percent.

The nursing home and other facilities survey was conducted by NCHS in 1963, 1967, 1969, 1971, 1973, 1976, 1978, 1980, 1982, and 1986. In the 1980 and 1982 NMFI surveys, only nursing and related care homes were covered. In 1986, nursing and related care homes and facilities for the mentally retarded were covered, and the survey was called the Inventory of Long-Term Care Places. NCHS surveyed certain types of homes that were excluded from the State surveys.

Statistics derived from the hospital and nursing home and other facilities surveys were adjusted for both facility and item nonresponse. Missing items on the questionnaire were imputed, when possible, by using information reported by the same facility in a previous survey. When data were not available from a previous survey for a responding facility, the data were imputed by using data from similar responding facilities. Similar facilities are defined as those with the same types of business, ownership, service, and approximately the same bed size.

For more detailed information, see:

- National Center for Health Statistics, D. A. Roper. 1986. Nursing and related care homes as reported from the 1982 NMFI survey. *Vital and Health Statistics*. Series 14, No. 32. DHHS Pub. No. (PHS) 86-1827. Public Health Service. Washington: U.S. Government Printing Office.
- National Center for Health Statistics, A. Sirrocco. 1987. The 1986 Inventory of Long-Term Care Places: An overview of facilities for the mentally retarded. *Advance Data From Vital and Health Statistics*. No. 143. DHHS Pub. No. (PHS) 87-1250. Public Health Service. Hyattsville, Md.

Data are published in *Vital and Health Statistics*, Series 14.

National Hospital Discharge Survey (NHDS)

- Twenty-year trends in hospital discharges
- Diagnoses and multiple diagnoses
- Procedures and multiple procedures
- Average length of stay

The National Hospital Discharge Survey is a continuing nationwide sample survey of short-stay hospitals in the United States that has been conducted since 1965. The scope of the survey encompasses patients discharged from noninstitutional hospitals, excluding Federal hospitals, located in the 50 States and the District of Columbia. Only hospitals having six beds or more for patient use and those in which the average length of stay for all patients is less than 30 days are included in the survey.

The sample was selected from a frame of all (about 7,500) short-stay non-Federal hospitals in the United States. A stratified sample design is used; hospitals are stratified according to bed size and geographic location. The probability of selection of a hospital decreases as the bed size of the hospital decreases. Within each sample hospital, a systematic random sample of discharges is selected from the daily discharge listing sheet. The within-hospital sampling ratio for selecting discharges varies inversely with the probability of selection of the hospital, so that the overall probability of selecting a discharge is approximately the same in each bed-size class.

Hospitals in the survey use an abstract form to transcribe data from the face sheet of hospital records. Forms are completed either by hospital staff or representatives of the National Center for Health Statistics.

In 1985, for the first time, an additional data collection procedure was used for the survey. An automated method, used in approximately 17 percent of the sample hospitals, involved the purchase of data tapes from commercial abstracting services. For hospitals using the automated system, tapes containing machine-readable medical record data were purchased from commercial abstracting services.

The basic unit of estimation for the survey is the sample patient abstract. The estimation procedure involves inflation by the reciprocal of the probability of selection, adjustment for nonresponding hospitals and missing abstracts, and ratio adjustments to fixed totals. Of the hospitals selected for the survey, 493 were within the scope of the survey in 1986, and 418 participated in the survey in 1982. Data were abstracted from about 193,000 medical records.

For more detailed information on the design of the survey and the magnitude of sampling errors associated with the estimates, see:

- National Center for Health Statistics, E. J. Graves. 1988. Utilization of short-stay hospitals: Annual Summary, United States, 1986. *Vital and Health Statistics*. Series 13, No. 96. DHHS Pub. No. (PHS) 88-1757. Public Health Service. Washington: U.S. Government Printing Office.

Data are published in *Vital and Health Statistics*, Series 13.

National Ambulatory Medical Care Survey (NAMCS)

- Visits to office-based physicians
- Physicians' diagnoses
- Patients' symptoms
- Drugs prescribed
- Referrals

The National Ambulatory Medical Care Survey is a national probability sample of ambulatory medical encounters. The scope of the survey covers physician-patient encounters in the offices of non-Federally employed physicians classified by the American Medical Association or American Osteopathic Association as "office-based, patient care" physicians. Visits to hospital-based physicians; visits to specialists in anesthesiology, pathology, and radiology; visits to physicians who are principally engaged in teaching, research, or administration; telephone contacts; and non-office visits are excluded from the survey.

A multistage probability design is employed. The first-stage sample consists of 112 primary sampling units (PSU's) selected from about 1,900 such units into which the United States has been divided. In each sample PSU, a sample of practicing physicians is selected. The final stage involves selection within a randomly assigned 7-day reporting period and the selection of samples of patient visits during that period.

The NAMCS was conducted annually from 1974 through 1981 with samples of about 3,000 physicians each year. The survey was conducted again in 1985.

For the 1985 survey, a sample of 5,032 non-Federal, office-based physicians was selected from masterfiles maintained by the American Medical Association and the American Osteopathic Association. The physician response rate for 1985 was 70.2 percent, providing data concerning a random sample of about 71,594 patient visits.

The next cycle of the NAMCS is scheduled for 1989 with a sample of 2,500 physicians. Plans are to conduct the NAMCS annually thereafter and to include visits to hospital outpatient departments beginning in 1991.

The estimation procedure basically has three components: inflation by the reciprocal of the probability of selection, adjustment for nonresponse, and ratio adjustment to fixed totals.

For more detailed information on the design of the survey and the magnitude of sampling errors associated with the estimates, see:

- National Center for Health Statistics, T. McLemore and J. DeLozier. 1987. 1985 summary, National Ambulatory Medical Care Survey. *Advance Data From Vital and Health Statistics*. No. 128. DHHS Pub. No. (PHS) 87-1250. Public Health Service. Hyattsville, Md.

Data are published in *Vital and Health Statistics*, Series 13.

National Nursing Home Survey (NNHS)

- The number of residents of nursing homes
- Functional status of residents
- People discharged from nursing homes
- Characteristics of the nursing homes
- Expenditures of nursing homes

Three sample surveys were conducted by the National Center for Health Statistics to obtain information on nursing homes, their expenditures, residents, staff, and, in the recent surveys, discharged patients. The first survey was conducted from August 1973 through April 1974. The second survey was conducted from May through December 1977. The most recent survey was conducted from August 1985 through January 1986.

Data on facilities were collected by personal interviews with administrators; facility accountants completed questionnaires on expenditures. Resident data were collected by personal interviews with a nurse familiar with the care provided to the resident. The nurse relied on the medical record and personal knowledge of the resident. Employees completed self-administered questionnaires. Discharge data were based on information recorded in the medical record. Additional data about the current and discharged residents were obtained by telephone interviews with next of kin.

For the survey conducted in 1973–74, the universe included only those nursing homes that provided some level of nursing care. Thus, homes providing only personal or domiciliary care were excluded. The sample of 2,118 homes was selected from the 17,685 homes that provided some level of nursing care and were listed in the 1971 National Master Facility Inventory or from those that opened for business in 1972. Data were obtained from 1,908 facilities, about 20,620 staff, and 19,013 residents. Response rates were 97 percent for facilities, 88 percent for expenditures, 98 percent for residents, and 82 percent for staff.

The scope of the 1977 survey encompassed all types of nursing homes, including personal care and domiciliary care homes. The sample of 1,698 facilities was selected from 23,105 nursing homes in the sampling frame, which consisted of all homes listed in the 1973 National Master Facility Inventory (NMFI) and those opening for business between 1973 and December 1976. Data were obtained from 1,451 facilities, about 13,634 staff, 7,033 residents,

and 5,142 discharged residents. Response rates were 95 percent for facilities, 85 percent for expenses, 81 percent for staff, 99 percent for residents, and 97 percent for discharges.

The scope of the 1985 NNHS was similar in that it included all types of nursing homes. The sample of 1,220 homes was selected from a sampling frame of 20,479 nursing and related-care homes. The frame consisted of all homes in the 1982 NMFI, homes identified in the 1982 Complement Survey of the NMFI as missing from the 1982 NMFI, facilities that opened for business between 1982 and June 1984, and hospital-based nursing homes obtained from the Health Care Financing Administration. Data were obtained from about 1,079 facilities, 2,763 registered nurses, 5,243 current residents, and 6,023 discharges. Response rates were 93 percent for facilities, 68 percent for expenses, 80 percent for registered nurses, 97 percent for residents, 95 percent for discharges, and 90 percent for next of kin.

Statistics from NNHS are derived by a ratio-estimating procedure. Statistics are adjusted for failure of a home to respond, failure to fill out one of the questionnaires, and failure to complete an item on a questionnaire.

For more information on the 1973–74 and 1977 surveys, see:

- National Center for Health Statistics, M. R. Meiners. 1975. Selected operating and financial characteristics of nursing homes, United States, 1973–74 National Nursing Home Survey. *Vital and Health Statistics*. Series 13, No. 22. DHEW Pub. No. (HRA) 76-1773. Health Resources Administration. Washington: U.S. Government Printing Office.
- National Center for Health Statistics, J. F. Van Nostrand, A. Zappolo, E. Hing, et al. 1979. The National Nursing Home Survey, 1977 Summary for the United States. *Vital and Health Statistics*. Series 13, No. 43. DHHS Pub. No. (PHS) 79-1794. Public Health Service. Washington: U.S. Government Printing Office.

For more information on the 1985 survey see:

- National Center for Health Statistics, E. Hing, E. Sekscenski, and G. Strahan. 1989. The National Nursing Home Survey; 1985 summary for the United States. *Vital and Health Statistics*. Series 13, No. 97. DHHS Pub. No. (PHS) 89-1758. Public Health Service. Washington: U.S. Government Printing Office.

Data are published in *Vital and Health Statistics*, Series 13.

Longitudinal studies based on provider surveys

National Nursing Home Survey Followup

- Nursing home utilization patterns
- Estimates of length of stay
- Change in payment sources
- Reasons for admission

The National Nursing Home Survey Followup was designed to collect information on patterns of nursing home and hospital use, particularly among the elderly. The followup builds on the information collected in the 1985 National Nursing Home Survey. Data from this survey included information on the characteristics and nursing staffs of a representative sample of long-term care facilities, on the residents who were living in the facilities at the time of the facility contact, and on those who had been discharged during the 12 months prior to the facility contact. To supplement the information gathered on current and discharged residents, a next-of-kin component was designed to obtain data that were not readily available from the nursing facilities, such as information on the subject's health during the period immediately preceding the nursing home admission and information on previous nursing home utilization. The followup collects additional information on the flow of the sampled residents in and out of long-term care facilities and hospitals. These utilization profiles can then be examined in relation to information on the facilities and the residents that was obtained at the baseline 1985 National Nursing Home Survey.

The National Nursing Home Survey Followup extends the period of observation of these utilization patterns by 18–24 months. Information is obtained on the use of nursing homes and hospitals since the last contact. Respondents for all subjects not known to be deceased at the time of the National Nursing Home Survey were interviewed in 1987 (approximately 6,000 cases). Respondents for the surviving cohort members were recontacted in the summer of 1988. The interviews are conducted using computer-assisted telephone interviewing and the questionnaire includes questions concerning vital status, nursing home and hospital utilization since the last contact, current living arrangements, and source of payment.

Study schedule

National Nursing Home Survey (Baseline): 1985
National Nursing Home Survey Followup, Wave 1: 1987
National Nursing Home Survey Followup, Wave 2: 1988

Population-based surveys

National Health Interview Survey (NHIS)

Every year the NHIS provides data on:

- Doctor visits and hospital stays
- Chronic and acute conditions
- Health status indicators
- Limitation of activities
- Injuries and impairments
- Work-loss and school-loss days

Selected current topics are:

- Health promotion and disease prevention
- Knowledge of and attitudes toward AIDS
- Smoking
- Health insurance
- Cancer risk factors
- Child health
- Aging

The National Health Interview Survey is a continuing nationwide sample survey in which data are collected on the incidence of acute illness and injuries, the prevalence of chronic conditions and impairments, the extent of disability, the utilization of health care services, and other health related topics. The NHIS data have been collected through personal interviews with household members by U.S. Bureau of the Census interviewers since the survey's inception in 1957. The questionnaires consist of two parts: (1) a set of basic health and demographic items, and (2) one or more sets of questions on current health topics.

The sampling plan of the NHIS follows a multistage probability design that permits continuous sampling of the civilian noninstitutionalized population residing in the United States. The survey is designed in such a way that the sample scheduled for each week is representative of the target population, and the weekly samples are additive over time. The response rate has been around 96 percent in recent years.

The NHIS sample redesign for the years 1985–94 included several important changes from the previous design. The sample was changed to be an area sample. The number of primary sampling units (PSU's) was reduced from 376 to 198 for sampling efficiency. The PSU's with predominantly black populations were oversampled to increase the precision of estimates for that population. The total sample of PSU's was divided into four panels, each of which is representative of the U.S. population, to allow for flexibility in total sample size without compromising the estimates. This sample design facilitates followup studies and provides a sampling frame for other NCHS surveys. (See National Survey of Family Growth.)

An NHIS sample for a typical data year consists of approximately 7,500 segments containing about 59,000 assigned households. Of these households, approximately 10,000 are expected to be vacant, demolished, or occupied by persons not in the target population of the survey. The expected sample size of 49,000 occupied households yields a probability sample of about 122,000 persons.

Basic health and demographic items

From the basic health and demographic items on the questionnaire, national estimates are produced annually on:

- Disability days, including restricted activity and bed disability days, and work-loss and school-loss days
- Physician visits in a 2-week and 12-month reference period
- Acute and chronic conditions responsible for these disability days and physician visits
- Long-term limitation of activity resulting from chronic disease or impairments and the associated conditions
- Episodes of short hospital stays in the past year
- Demographic characteristics of the household, including information for linkage to the National Death Index

Current health topics

Questionnaires on current health topics change each year in response to the need for data on special topics. Examples of current health topics from recent years include alcohol use, child health, dental care, health insurance, cancer risk factors, vitamin and mineral use, knowledge of and attitudes toward AIDS, health promotion and disease prevention, issues related to aging, functional limitations, polio survivors, adoption, medical device implants, and occupational health.

Targeted population surveys (TPS) are followup studies of NHIS respondents who report specific conditions at the time of the household interview or represent a certain demographic characteristic. Examples of TPS are the Post-Polio Survival Survey, an epidemiologic study of 800 persons identified during the 1987 NHIS as being at risk for post-polio syndrome, and the Work Injury Followback Survey, a followback study of about 200 persons reporting occupational injuries during the 2-week reference period prior to the NHIS interview.

Suggestions and requests for current health topics and targeted population surveys are solicited and received from sources in both the private and public health sectors. Topics are selected after consultation with agencies within the Public Health Service and after an assessment of priority health issues and the need for population-based data.

For a description of the survey design and procedures through 1984, see:

- National Center for Health Statistics, M. G. Kovar and G. S. Poe. 1985. The National Health Interview Survey Design, 1973–84, and Procedures, 1975–83. *Vital and Health Statistics*. Series 1, No. 18. DHHS Pub. No. (PHS) 85-1320. Public Health Service. Washington: U.S. Government Printing Office.

For a description of the survey design implemented in 1985, see:

- National Center for Health Statistics, A. J. Moss and V. L. Parsons. 1986. Current estimates from the National Health Interview Survey, United States, 1985. *Vital and Health Statistics*. Series 10, No. 160. DHHS Pub. No. (PHS) 86-1588. Public Health Service. Washington: U.S. Government Printing Office.

Data are published primarily in *Vital and Health Statistics*, Series 10. Public-use data tapes for the basic health and demographic questionnaire are available through the National Technical Information Service. Public-use data tapes for current health topics and targeted population surveys may be ordered through the Director of the Division of Health Interview Statistics, 3700 East-West Highway, Room 2-44, Hyattsville, MD 20782.

National Medical Care Utilization and Expenditure Survey (NMCUES)

- Use of medical services
- Charges for medical services
- Sources of payment for medical services
- Health insurance coverage
- Access to medical care
- Conditions

The National Medical Care Utilization and Expenditure Survey was conducted in 1980 and early 1981 by the National Center for Health Statistics and the Health Care Financing Administration.

Data were collected on health, access to and use of medical services, associated charges and sources of payment, and health insurance coverage for the civilian noninstitutionalized population. Data for the year 1980 were collected in five rounds of interviews conducted at approximately 3-month intervals during 14 months of 1980–81. The data were obtained for the full 12 months of 1980 or for the proportion of the year that the sample persons were part of the U.S. civilian noninstitutionalized population. The survey consisted of three components: the National Household Survey, the State Medicaid Household Survey, and the Administrative Records Survey.

The National Household component included 17,123 sample persons in 6,600 participating reporting units. A reporting unit was defined as all persons related to each other by blood, marriage, adoption, or foster-care status and living in the same housing unit or group quarters. Persons living in institutions, active members of the Armed Forces, and persons residing outside the United States were not eligible for the sample. All persons living in the housing unit or group quarters at the time of the first interviewer contact were included in the survey.

In addition, unmarried students 17–22 years of age who lived away from home were included if their parent or guardian was included. Also, relatives who moved in from outside the original population (that is, from an institution or from the Armed Forces) were included in the survey.

The State Medicaid household component included 11,600 sample persons in 4,800 reporting units. The sample was selected from the Medicaid eligibility files in California, Michigan, New York, and Texas (1,200 per State). This sample also excluded persons living in institutions, active members of the Armed Forces, and persons residing outside the United States. Information was obtained for sample persons in the household. The administrative records component was used to obtain information concerning program eligibility and payments for medical care for persons receiving Medicare and Medicaid benefits.

The household and the family tapes are two public-use data tapes that contain data from NMCUES and are available from the National Technical Information Services. The NMCUES household public-use tapes consist of six files: the person, medical visit, dental visit, hospital stay, prescribed medicines and other medical expenses, and condition files. The person file has one record for each of the 17,123 eligible persons. There are data describing the person's demographic characteristics, health care coverage, employment, income, and usual source of care; number of visits, hospital admissions, and other medical events reported for 1980; total charges for each category of care; and limitations and disabilities (including identification of conditions). Data from the other five files, which have more detailed information about events summarized in the person file, can be linked to records in the person file through a unique identification number assigned to each person.

In addition to the household public-use tapes, family public-use tapes were constructed. The national household sample encompassed approximately 6,800 families. Because NMCUES is a panel survey (it covers an entire year with a series of four or five interviews), the concept of longitudinal family was developed to deal with the fact that the composition of a family can change over time and that families came into existence and went out of existence over the year.

The NMCUES family public-use data tapes include one record for each family interviewed. Each record includes information on the family as a social unit, the head of the family, the spouse of the head of the family, health status and health conditions, use of health services, health insurance coverage, socioeconomic and sociodemographic data, and out-of-pocket and total expenditures for health care. Records from the family public-use tape can be linked to records from the person file through unique family identification numbers found on each record.

Data from the NMCUES are published in three special series of reports. There are Methodological Reports (Series A), Descriptive Reports (Series B), and Analytical Reports (Series C).

A more detailed description of NMCUES is in: Bonham, G. S. 1983. *Procedures and Questionnaires of the National Medical Care Utilization and Expenditure Survey*. National Medical Care Utilization and Expenditure Survey. Series A, Methodological Report No. 1. DHHS Pub. No.

83-20001. National Center for Health Statistics, Public Health Service. Washington: U.S. Government Printing Office.

A detailed discussion of the concept of longitudinal family is in: Dicker, M., and Sunshine, J. H. 1987. *Family Use of Health Care: United States 1980*. National Medical Care Utilization and Expenditure Survey. Series B, Descriptive Report No. 10. DHHS Pub. No. 87-20210. National Center for Health Statistics, Public Health Service. Washington: U.S. Government Printing Office.

National Health Examination Surveys and National Health and Nutrition Examination Surveys (NHANES)

- Heart disease
- Asthma, chronic bronchitis, emphysema
- Diabetes
- Kidney disease and other urologic disorders
- Gallbladder disease
- Osteoporosis
- Arthritis
- Infectious disease
- Dental caries and periodontal disease
- Allergies
- Depression
- Hearing loss
- Iron deficiency anemia and other nutritional conditions
- Obesity

The National Health and Nutrition Examination Surveys are designed to assess the health and nutritional status of adults and children in the United States through interviews and direct physical examinations. The detailed interview includes demographic, socioeconomic, dietary, and health-related questions. The examination component consists of medical and dental examinations, physiological measurements, and laboratory tests administered by highly trained medical personnel in mobile examination centers. The data are used to estimate the prevalence of major diseases, nutritional disorders, and potential risk factors. The data are also the basis for national standards for such measurements as height, weight, and blood pressure. Data are used in epidemiological and health sciences research to direct and design health programs and services.

Five surveys have been completed in this program, and a sixth is being conducted in 1988–94. The years of data collection for these surveys and the age ranges covered by each are listed below.

National Health Examination Surveys:

Years	Survey	Age range of sample
1960–62	NHES I	18–79 years
1963–65	NHES II	6–11 years
1966–70	NHES III	12–17 years

National Health and Nutrition Examination Surveys:

Years	Survey	Age range of sample
1971–74	NHANES I	1–74 years
1974–75	NHANES I Augmentation	25–74 years
1976–80	NHANES II	6 months–74 years
1988–94	NHANES III	2 months and older

Health Examination Surveys (NHES)

The National Health Examination Surveys were nationwide sample surveys in which data for determining the health status of the population were collected through direct standardized physical examinations, clinical and laboratory tests, and measurements. Three were conducted in the 1960's.

For the first cycle of the National Health Examination Survey (NHES I), conducted in 1960–62, a sample of 7,710 adults, of whom 86.5 percent were examined, was selected to represent the civilian noninstitutionalized adults 18–79 years of age.

In the second cycle of the National Health Examination Survey (NHES II), conducted in 1963–65, a sample of 7,417 children 6–11 years of age, of whom 96 percent were examined, was selected.

In the third program (or cycle) of the National Health Examination Survey (NHES III), conducted in 1966–70, data were collected on children 12–17 years of age. There was also a longitudinal component because some of the children examined in cycle II were also examined in cycle III. A sample of 7,514 youths, of whom 90 percent were examined, was selected.

Health and Nutrition Examination Surveys (NHANES)

In 1971, a nutrition surveillance component was added, and the name was changed to the National Health and Nutrition Examination Survey.

In the first National Health and Nutrition Examination Survey (NHANES I), conducted from 1971 through 1974, a major purpose was to measure and monitor indicators of the nutritional status of the American people through dietary intake data, biochemical tests, physical measurements, and clinical assessments for evidence of nutritional deficiency. Detailed examinations were given by dentists, ophthalmologists, and dermatologists with an assessment of need for treatment. In addition, data were obtained for a subsample of adults on overall health care needs and behavior, and more detailed examination data were collected on cardiovascular, respiratory, arthritic, and hearing conditions. The detailed examination sample was augmented in 1974–75 by an additional sample of adults 25–74 years of age.

The NHANES I target population was the civilian noninstitutionalized population 1–74 years of age residing in the coterminous United States, except for people

residing on any of the reservation lands set aside for the use of American Indians. The sample design was a multistage, stratified probability sample of clusters of persons in land-based segments. The survey was conducted in 65 primary sampling units (PSU's) selected from the 1,900 PSU's in the coterminous United States. A subsample of persons 25–74 years of age was selected to receive the more detailed health examination. Groups at high risk of malnutrition were oversampled at known rates throughout the process.

Household interviews were conducted for more than 96 percent of the 28,043 persons selected for the NHANES I sample. About 75 percent (20,749) were examined.

For NHANES II, conducted from 1976 through 1980, the nutrition component remained nearly identical to that of NHANES I. In the medical area, primary emphasis was placed on diabetes, kidney and liver function, allergy, and speech pathology.

The NHANES II target population was the civilian noninstitutionalized population 6 months–74 years of age residing in the United States, including Alaska and Hawaii. NHANES II utilized a multistage probability design that involved selection of PSU's, segments (clusters of households) within PSU's, households, eligible persons, and finally sample persons. The sample design provided for oversampling of persons 6 months–5 years of age, those 60–74 years of age, and those living in poverty areas.

A sample of 27,801 persons was selected for NHANES II. Of this sample, 73.1 percent (20,322) were examined.

The estimation procedure used to produce national statistics from NHANES I and NHANES II involved inflation by the reciprocal of the probability of selection, adjustment for nonresponse, and poststratified ratio adjustment and population totals. Sampling errors also were estimated to measure the reliability of the statistics.

Examinations and interviews are conducted in specially equipped and designed mobile examination centers that travel to survey locations throughout the country. The survey team consists of a physician, dentist, medical and health technicians, and dietary and health interviewers. A large staff of interviewers conducts the household interviews.

In each location, local health and government officials are notified of the upcoming survey. Households in the survey receive an advance letter and booklet to introduce the survey. Local media may feature stories about the survey.

The survey is designed to facilitate and encourage participation. Transportation is provided to and from the examination center, and participants receive remuneration. With the respondent's permission, medical and dental findings are reported to each person's source of health care. All information collected in the survey is kept strictly confidential. Privacy is protected by public law.

Data collection for the third National Health and Nutrition Examination Survey began in September 1988 and will continue for approximately 6 years at 88 locations across the country.

The sample for the survey is selected to be representative of the civilian noninstitutionalized population ages 2 months and older. Unlike previous health examination surveys, NHANES III has no upper age limit. In order to produce reliable statistics for black persons and Hispanics, these groups are oversampled.

All participants receive a physical examination, body measurements, and dietary interview. Depending on the age of the participant, the rest of the examination includes:

- Dental examination
- Health interview
- Cognitive and neurological tests
- Blood and urine tests
- Hearing tests
- Vision examination
- Allergy skin test
- Spirometry
- Electrocardiogram (ECG)
- X rays
- Ultrasound examinations of the gallbladder
- Measurements of bone density

In general, the older the individual, the more extensive the examination. Selected persons who are unable to come to the examination center may be given a less extensive examination in their homes.

The survey is being conducted in two 3-year segments, with data analyzed at the end of each of the segments as well as for the full survey.

For more information on NHANES I, see:

- National Center for Health Statistics, H. W. Miller. 1973. Plan and operation of the National Health and Nutrition Examination Survey, United States, 1971–73. *Vital and Health Statistics*. Series 1, Nos. 10a and 10b. DHEW Pub. No. (HSM) 73-1310. Health Services and Mental Health Administration. Washington: U.S. Government Printing Office.
- National Center for Health Statistics, A. Engel, R. S. Murphy, K. Maurer, and E. Collins. 1978. Plan and operation of the NHANES I Augmentation Survey of Adults 25–74 Years, United States, 1974–75. *Vital and Health Statistics*. Series 1, No. 14. DHEW Pub. No. (PHS) 78-1314. Public Health Service. Washington: U.S. Government Printing Office.

For more information on NHANES II, see:

- National Center for Health Statistics, A. McDowell, A. Engel, J. T. Massey, and K. Maurer. 1981. Plan and operation of the Second National Health and Nutrition Examination Survey, 1976–80. *Vital and Health Statistics*. Series 1, No. 15. DHHS Pub. No. (PHS) 81-1317. Public Health Service. Washington: U.S. Government Printing Office.

Data from NHES and NHANES are published in *Vital and Health Statistics*, Series 11.

Hispanic Health and Nutrition Examination Survey (HHANES)

In the NHES and NHANES programs conducted during the 1960's and 1970's, the numbers of Hispanics in the samples were too small to make reliable estimates of their health conditions. Therefore, a Hispanic Health and Nutrition Examination Survey was conducted in 1982–84 to obtain data on the health and nutritional status of three Hispanic groups:

- Data on Mexican Americans residing in selected counties of Texas, Colorado, New Mexico, Arizona, and California were collected July 1982 through November 1983. There were 9,894 persons in the sample, of whom 8,554 were interviewed and 7,462 examined.
- Data on Cuban Americans residing in Dade County (Miami), Florida, were collected from January 1984 through April 1984. There were 2,244 persons in the sample, of whom 1,766 were interviewed and 1,337 examined.
- Data on Puerto Ricans residing in the New York area, including parts of New Jersey and Connecticut, were collected from May 1984 through December 1984. There were 3,786 persons in the sample of whom 3,369 were interviewed and 2,834 examined.

The general structure of the HHANES sample design was similar to that of the previous National Health and Nutrition Examination Surveys. All of these studies have used complex, multistage, stratified, clustered samples of defined populations. The major difference between HHANES and the previous surveys is that HHANES was a survey of three special subgroups of the population in selected areas of the United States rather than a national probability sample.

Data collection began with a household interview. Four questionnaires used in the household were:

- A Household Screener Questionnaire, administered at each selected address, for determining household eligibility and for selecting sample persons
- A Family Questionnaire, administered once for each family containing sample persons, that included sections on family relationships, basic demographic information for sample persons and head of family, Medicare and health insurance coverage, participation in income assistance programs, and housing characteristics
- An Adult Sample Person Questionnaire (12 through 74 years) that, depending on age, included sections on health status measures, health services utilization, smoking (20 through 74 years), meal program participation, and acculturation. Information on the use of medicines and vitamins in the past 2 weeks was also obtained
- A Child Sample Person Questionnaire (persons 6 months through 11 years) that included sections on a number of health status issues, health care utilization, infant feeding practices, participation in meal programs, school attendance, and language use. Information on the use of medicines and vitamins in the past 2 weeks was also obtained

At the Mobile Examination Center, two questionnaires were used and an examination was performed. They were:

- An Adult Sample Person Supplement (12 through 74 years) that included sections on alcohol consumption, drug abuse, depression, smoking (12 through 19 years), pesticide exposure, and reproductive history.
- A Dietary Questionnaire (6 months through 74 years) by which trained dietary interviewers collected information about "usual" consumption habits and dietary practices and recorded foods consumed during the 24 hours prior to midnight preceding the day of the interview.
- An examination that included a variety of tests and procedures.

Age at interview and other factors determined which procedures were administered to which examinees. A dentist performed a dental examination and a vision test. Technicians took blood and urine specimens and administered a glucose tolerance test, x rays, electrocardiograms, and ultrasonographs of the gallbladder. Technicians also performed hearing tests and took a variety of body measurements. A physician performed a medical examination, focusing especially on the cardiovascular, gastrointestinal, neurological, and musculoskeletal systems. The physicians' impression of overall health, nutritional and weight status, and health care needs was also recorded. Some analyses of blood and urine specimens were performed by technicians in the examination center; others were conducted under contract at various laboratories.

Because the HHANES sample is not a simple random one, it is necessary to incorporate sample weights for proper analysis of the data. These sample weights are a composite of individual selection probabilities, adjustment for noncoverage and nonresponse, and poststratification adjustments. Sampling errors are estimated to measure the reliability of statistics. They are calculated to take into account the complex sample design and the ratio adjustments used to produce the sample weights.

For more information on HHANES, see:

- National Center for Health Statistics. 1985. Plan and operation of the Hispanic Health and Nutrition Examination Survey, 1982–84. *Vital and Health Statistics*. Series 1, No. 19. DHHS Pub. No. (PHS) 85-1321. Public Health Service. Washington: U.S. Government Printing Office.

Data from HHANES are published in *Vital and Health Statistics*, Series 11.

National Survey of Family Growth (NSFG)

- Adoption
- Breastfeeding
- Contraception and sterilization
- Infertility
- Live births and births expected
- Low birth weight
- Miscarriages and stillbirths
- Prenatal care
- Teenage sexual activity and pregnancy
- Unmarried cohabitation
- Use of family planning services
- Wanted and unwanted births

Data from the National Survey of Family Growth are based on samples of women ages 15–44 years in the civilian noninstitutionalized population living in the conterminous United States. The first and second cycles excluded women who had never been married, except those with offspring in the household. The third and fourth cycles include all women ages 15–44 years, regardless of whether they have ever been married.

The purpose of the survey is to provide national data on the demographic and social factors associated with childbearing, adoption, and maternal and child health. These factors include sexual activity, marriage, unmarried cohabitation, divorce and remarriage, contraception and sterilization, infertility, breastfeeding, pregnancy loss, low-birth weight, and use of medical care for family planning, infertility, and prenatal care.

Interviews are conducted in person by professional female interviewers using a standardized, printed questionnaire. The average interview length is about 1 hour. Black women are sampled at higher rates than other women, so that separate, reliable statistics for black women can be computed from the survey.

Cycle I of the National Survey of Family Growth was conducted from June 1973 through February 1974. The counties and independent cities of the United States were combined to form a frame of primary sampling units (PSU's), and 101 PSU's were selected as the first-stage sample. The next three stages produced a clustered sample of 28,998 households within the 101 PSU's. At 26,028 of these households (89.8 percent), a household screener interview was completed. These screeners produced a fifth-stage sample of 10,879 women, of whom 9,797 were interviewed. Never-married women (except those with offspring in the household) were excluded from Cycle I.

Cycle II was conducted from January through September 1976. The sample design was basically the same as it was in Cycle I. The sample consisted of 27,162 households in 79 PSU's. Household screener interviews were completed at 25,479 of these households (93.8 percent). Of the 10,202 women in the sample, 8,611 were interviewed. Again, never-married women (except those with offspring in the household) were excluded from the survey for Cycle II.

Interviewing for Cycle III of the NSFG was conducted from August 1982 through February 1983. The sample design was similar to that in Cycle II; 31,027 households were selected in 79 PSU's. Household screener interviews were completed in 29,511 households (95.1 percent). Of the 9,964 eligible women identified, 7,969 were interviewed. The sample for Cycle III included black women and women 15–19 years of age at higher rates than other women. All women ages 15–44 years, regardless of marital status, were represented in Cycle III.

In order to produce estimates for the entire population of eligible women in the United States, data for the interviewed sample women were inflated by the reciprocal of the probability of selection at each stage of sampling and adjusted for both screener and interview nonresponse. Cycles I and II estimates for ever-married women were poststratified to benchmark population values for 12 age-race categories based on data from the Current Population Survey of the U.S. Bureau of the Census. Cycle III was poststratified for 24 categories of age, race, and marital status.

Quality control procedures for interviewer selection, interviewer training, field listing, and data processing were built into NSFG to minimize nonsampling error and bias. In addition, the nonresponse adjustments in the estimator were designed to minimize the effect of nonresponse bias by assigning to nonrespondents the characteristics of similar respondents. Sampling errors were estimated by balanced half-sample replication.

Cycle IV was conducted in 1988. Cycle IV is comparable in scope and content to the 1982 survey. The principal difference is procedural: The sample was obtained from the 1986 National Health Interview Survey. About 8,000 completed interviews were obtained from women 15–44 years of age in the first half of 1988. A public-use computer tape and the first preliminary reports are scheduled to be published following completion of data processing in 1989.

A new longitudinal feature has been added to Cycle IV. A sample of respondents are being reinterviewed at approximately 13-month intervals between Cycles IV and V. The reinterviews are done by telephone using computer-assisted telephone interviews. They will focus on verifying and updating selected items from the Cycle IV interviews and on new data for special research in reproductive health.

For the balanced half-sample technique, summary sampling error charts, and detailed information on the sample design, see:

- National Center for Health Statistics, D. K. French. 1979. National Survey of Family Growth, Cycle I: sample design, estimation procedures, and variance estimation. *Vital and Health Statistics*. Series 2, No. 76. DHEW Pub. No. (PHS) 78-1350. Public Health Service. Washington: U.S. Government Printing Office.
- National Center for Health Statistics, W. R. Grady. 1981. National Survey of Family Growth, Cycle II: sample design, estimation procedures, and variance estimation. *Vital and Health Statistics*. Series 2, No. 87. DHHS Pub. No. (PHS) 81-1361. Public Health

Service. Washington: U.S. Government Printing Office.

- National Center for Health Statistics, C. Bachrach, M. Horn, W. Mosher, and I. Shimizu. 1985. National Survey of Family Growth, Cycle III: Estimation procedures, weighting, and variance estimation. *Vital and Health Statistics*. Series 2, No. 98. DHHS Pub. No. (PHS) 85-1372. Public Health Service. Washington: U.S. Government Printing Office.

Data are published in *Vital and Health Statistics*, Series 23.

Longitudinal studies based on population surveys

NHANES I Epidemiologic Followup Study

- History and development of chronic disease and functional impairment
- Mortality and morbidity associated with suspected risk factors
- Hospital and nursing home utilization
- Changes in selected risk factors

The NHANES I Epidemiologic Followup Study 1982–84 was jointly initiated by the National Center for Health Statistics and the National Institute on Aging in collaboration with other National Institutes of Health and Public Health Service agencies. The primary purpose of the study is to investigate the relationships between physiological, nutritional, behavioral, and demographic characteristics collected through the National Health and Nutrition Examination Survey I interview (1971–75) and subsequent morbidity or mortality from specific diseases and conditions.

The first phase of the followup study was conducted in 1982–84. The study population included the 14,407 persons aged 25–74 years at the time of the NHANES I survey. Tracing was successfully completed on 93 percent of the cohort. Personal interviews—including weight, pulse, and blood pressure measurements—were conducted with traced, surviving subjects. Interviews with proxy respondents were conducted if the subject was deceased or incapacitated. Hospital and nursing home records were collected for all subjects, and death certificates were obtained for decedents.

In 1985–86, a Continued Followup of the Elderly NHANES I Cohort was conducted. Computer-assisted telephone interviews were conducted with elderly participants who had been ages 55 years and over at NHANES I. The interview data were augmented with health care facility abstracts and death certificates. In 1986–87, the NHANES I cohort was contacted again. Telephone interviews were conducted, and hospital and nursing home records and death certificates were obtained. This followup provides a more complete profile of hospital and nursing home use, resulting in enhanced data on mortality, natural history, and utilization.

Study schedule

National Health and Nutrition Examination Survey I (Baseline) 1971–75

NHANES I Epidemiologic Followup Study 1982–84
NHANES I Epidemiologic Followup Study (Elderly Cohort) 1986
NHANES I Epidemiologic Followup Study 1987

For a description of the 1982–84 study, see:

- National Center for Health Statistics, B. B. Cohen, H. E. Barbano, C. S. Cox, et al. 1987. Plan and operation of the NHANES I Epidemiologic Followup Study, 1982–84. *Vital and Health Statistics*. Series 1, No. 22. DHHS Pub. No. (PHS) 87-1324. Public Health Service. Washington: U.S. Government Printing Office.

Longitudinal Study of Aging

- Death rates by social, economic, family, and health characteristics
- Changes in functional status
- Changes in living arrangements
- Changes in coverage by public insurance
- Use of hospitals and nursing homes by individuals over time

The Longitudinal Study of Aging is a family of surveys based on the Supplement on Aging (SOA) to the 1984 National Health Interview Survey. The SOA was designed to obtain extensive information on family structure and frequency of contacts with children; housing (including barriers to movement, length of time in residence, ownership, and rental information); use of community and social supports; occupation and retirement (including sources of retirement income); ability to perform work-related functions; conditions and impairments; functional limitations (activities of daily living and instrumental activities of daily living) and providers of help in those activities. Information was obtained for 16,148 persons ages 55 years and over (96 percent of the eligible people in the interviewed households in the National Health Interview Survey). Ninety-two percent answered all questions for themselves.

The records of the approximately 16,000 persons who granted permission and who provided the information are being linked with the National Death Index. As the death is established through the linkage, cause-of-death information is being obtained. This will make possible the study of survival and death in relation to social, demographic, family, support, and health conditions.

Subsamples are being selected for reinterview. The first of these was a sample of all persons ages 80 years and over, all black persons ages 70 years and over, and one-half of all other persons ages 70–79 years. Relatives of those persons who were ages 70 years and over and living in the same household in 1984 were also included in the sample. The sample of 5,151 persons ages 70 years and over was interviewed again in 1986, using computer-assisted telephone interviews. Persons without telephones and those who

could not be contacted by telephone were mailed questionnaires. The status of 92 percent (4,734 persons) was ascertained through the reinterview. Of the people who could not be located, the status of 20 was ascertained through matching with the 1984–85 National Death Index; and the status of an additional 182 was ascertained through tracing. Thus, the status of 96 percent (4,936 persons) of the people selected for the 1986 interview is known.

The 1986 interview was designed to measure changes in functioning (ability to perform work-related activities, activities of daily living, instrumental activities of daily living) and the provision of help; changes in living arrangements, including movement toward living alone or with others in the community or into nursing homes; and use of medical and nursing home care. Their records were matched with the National Death Index to ascertain date of death, and cause-of-death information is being obtained. In addition, they were asked for their health insurance claim numbers and for their permission to match their interview records with the Medicare records maintained by the Health Care Financing Administration. The matches have been done, and the first information was included in the 1988 release of the public-use files.

The 1988 and 1990 interviews were designed to continue measuring the same changes. They also repeat some questions that were asked in 1984 because conditions could have changed over 4 (or 6) years. Beginning in 1988, the sample size was also increased to include all persons who were 70 years of age and over in 1984.

For information on the design and questionnaire for the Supplement on Aging, see:

- National Center for Health Statistics, J. E. Fitti and M. G. Kovar. 1987. The Supplement on Aging to the 1984 National Health Interview Survey. *Vital and Health Statistics*. Series 1, No. 21. DHHS Pub. No. (PHS) 87-1323. Public Health Service. Washington: U.S. Government Printing Office.

For information on the design and questionnaire for the Longitudinal Study on Aging 1986 Interview, see:

- National Center for Health Statistics, M. G. Kovar and J. E. Fitti. 1987. The Longitudinal Study of Aging: A description of the study. *Working Paper Series*. No. 31. Hyattsville, MD

Data are published in *Vital and Health Statistics*, Series 10.

Public-use data tapes are released through the Division of Health Interview Statistics, National Center for Health Statistics.

Data from more than one system

All of the data systems are designed to serve multiple purposes. Some of the more interesting and important measures, especially those that are unique to a data-collection system, or for which the system is the primary or only source, are given with the description of the system. However, other data systems may also have information that can be used to answer a specific research question.

It is impossible to suggest all of the analyses that are possible using data available from the many data-collection systems of the National Center for Health Statistics (NCHS). Because of the multiple sources of information, there is information available from several systems that can be used to address important public health issues. This section can only provide a brief introduction to the enormous amount of information that can be obtained from the NCHS data systems when they are used to answer substantive questions.

Having information from several systems provides different views about the subject. It provides the opportunity for special investigations. In each case, the information is about the population that the system is designed for; the auxiliary information is often specific to the system. The kind and quality of the specific items often depend on who provides the information; some of the systems obtain information from only one source; some systems use several sources.

Examples of data on the use of medical care may illustrate the complexity and possibilities.

Hospitalization

The National Hospital Discharge Survey is the primary source of data on hospitalizations for people of all ages. It has very detailed information about diagnoses, procedures, and lengths of stay because the information is obtained from the hospital discharge abstract. However, because an abstract is the source, it cannot be used to study multiple hospitalizations of the same person or to provide information about the person that the hospital does not have.

The National Vital Statistics Registration System is the source of information on how many people are born and die in hospitals and on the cause of death for decedents. It provides a means for detailed study of local variation because it includes all births and deaths in the United States. However, because a registration certificate is the source, it does not include other important information about the person.

Both of these systems have been in existence for many years and are extremely useful for studying time trends. Neither the population-based nor vital-statistics-based surveys are as useful for studying trends in hospitalization because questions and survey designs have been changed to meet changing needs for information and because some of them have not been conducted frequently.

However, such surveys provide information about people that supplements the information from the record-based systems, and they permit study of multiple hospitalizations. Some of them incorporate matching with hospital or mortality records to take advantage of the diagnostic detail on those records.

The National Mortality Followback Survey and the National Maternal and Infant Health Survey supplement the registration system by providing much more detailed information about other events surrounding birth and death. The National Mortality Followback Survey provides the opportunity to study hospitalization and multiple hospitalizations during the last year of life. The National Maternal and Infant Health Survey provides an opportunity for detailed study of hospitalization before and during childbirth. Both also provide economic and other information that is not on the certificates. However, because they are based on samples, they cannot be used to study geographic differences in as much detail.

The National Health Interview Survey supplements the National Hospital Discharge Survey and provides the opportunity to estimate the number of people with multiple hospitalizations during a year and to investigate relationships with characteristics of the person. It is especially useful for children past infancy and for adults under the age of 65. It is less useful for infants and people ages 65 years and over because it does not include people who died or were institutionalized between the hospitalization and the interview. The diagnostic information is less reliable and less detailed than that from the National Hospital Discharge Survey.

Longitudinal studies, such as the NHANES I Epidemiologic Followup and the Longitudinal Study of Aging, overcome some of these disadvantages. They provide information on the hospitalizations of individual adults over several years. They also include information from hospitals, Medicare records, and death certificates that supplement

the information from household respondents and provide better diagnostic data.

Data are also obtained retrospectively. The National Health and Nutrition Examination Surveys, the Hispanic Health and Nutrition Examination Survey, and the 1981 Child Health Supplement to the National Health Interview Survey included questions on all the child's hospitalizations since birth.

Physician visits and contacts

The primary source is the National Ambulatory Medical Care Survey, which provides the best diagnostic and service information. It is a survey of events, and it cannot be used to study multiple visits by the same person. In addition, this survey includes only visits to physicians in private office-based practice. For information on all visits for ambulatory medical care, including visits to clinics, outpatient services in hospitals, and freestanding ambulatory care clinics, one must use other systems. (This limitation will be overcome when the National Health Care Survey is fully implemented.)

The National Health Interview Survey must be used to study relationships between receiving (or not receiving) care and social and health status. It provides information on where people received ambulatory care so that one can determine what proportion of the people are receiving care from private physicians, and one can investigate whether there are differences by socioeconomic status.

The National Medical Care Utilization and Expenditure Survey provided a rare opportunity to study relationships between ambulatory care and hospitalization because people were in the survey for a full year.

The birth-registration system contains information on the timing of the first visit for prenatal care and the number of visits. It is used to study changes over time in whether mothers have received prenatal care and to investigate geographic variation.

The National Survey of Family Growth has information on visits for family planning made by women of childbearing age and on services given during those visits.

Nursing home use

The National Nursing Home Survey is the primary source of data. The additional sources are more limited than they are for other major sources of medical care because users of nursing homes are very likely to be older people.

Two longitudinal studies, the NHANES I Epidemiological Followup Study and the Longitudinal Study of Aging, provide information on the people who move from the community into (and out of) nursing homes. They can be used to study differences between people who become residents of nursing homes and those who do not.

The National Nursing Home Survey Followup provides information on people after they leave the nursing home. The National Mortality Followback Survey provides information on use of nursing homes during the last year of life.

Systems with information on use of medical care

Primary sources—based on records of providers

- National Health Care Survey
- National Hospital Discharge Survey
- National Ambulatory Medical Care Survey
- National Nursing Home Survey

Other sources

- National Health Interview Survey
- Longitudinal Study of Aging
- National Medical Care Utilization and Expenditure Survey
- National and Hispanic Health and Nutrition Examination Surveys
- NHANES I Epidemiological Followup Study
- National Nursing Home Followback Survey
- National Survey of Family Growth
- National Mortality Registration System
- National Mortality Followback Survey
- National Natality Registration System
- National Maternal and Infant Health Survey

*U.S. GOVERNMENT PRINTING OFFICE:1989-241-259:81008

Vital and Health Statistics series descriptions

U.S. DEPARTMENT OF HEALTH AND
HUMAN SERVICES
Public Health Service
Centers for Disease Control
National Center for Health Statistics
3700 East-West Highway
Hyattsville, Maryland 20782

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE $300

BULK RATE
POSTAGE & FEES PAID
PHS/NCHS
PERMIT No. G-281

DHHS Publication No. (PHS) 88-1329 Series 1 No. 23